

A new *Phylloscartes* (Tyrannidae) from southeastern Brazil

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Small flycatchers of *Phylloscartes* and related genera are among the characteristic birds of woodlands and forests in eastern Brazil. Some, such as *P. roquettei* of *caatinga* woodlands in Minas Gerais and the recently described *P. ceciliae* of upland forest in northeastern Brazil, have been little known (Willis & Oniki 1991, Teixeira 1987). Here we describe a new form of the *P. ventralis* group from coastal sand-ridge woodlands (*restinga*) and nearby riverine zones of the Ribeira Valley, southeastern São Paulo State. The form occurs south along the coast at least to Joinville, Santa Catarina (specimen in Field Museum Natural History, Chicago, *vide* D. F. Stotz).

From 5 to 10 July 1983, visiting the scrubby *restinga* or sand-ridge woodlands near Boqueirão, 13 km SW of the northeastern end of Ilha Comprida and opposite Iguape in southeastern São Paulo State, we noted a new call from small flycatchers that looked confusingly like several other species in the state. They had long bills and mottled faces like *P. ventralis*, a bird we knew well from the serras and interior plateau just northwest, but were so yellow on the face and underparts that we thought they might be *Phyllomyias virescens*, a species we also knew from Campos do Jordão and other serras of over 1200 m elevation to the north. We recently collected two calling birds from Ilha Comprida and, after examining these and other specimens, consider that the form merits specific status.

***Phylloscartes kronei* sp. nov.**

Holotype. Universidade Estadual Paulista "Museu de Ciências da Natureza—Campus Rio Claro, Zoologia", (MCN) no. 1, female from Jardim Europa, 25°01'S, 47°54'W, near *morro* (hill) on Ilha Comprida opposite Cananéia, São Paulo State, Brazil, 3 June 1991, prepared by Yoshika Oniki.

Paratype. MCN no. 2, male, same location, date, and preparator.

Diagnosis. Like *Phylloscartes ventralis* but yellow instead of white on supercilary line, brighter yellow on facial pale areas and throat, buff tint across chest lacking and replaced by faint greenish mottling. Greener and less buff-green or brownish-green on crown and back than *P. ventralis*. Post-auricular crescent usually darker. Tail usually 3–5 mm shorter than wing, not 1–3 mm shorter as in *P. ventralis*. Bill averaging larger than in *P. ventralis*, although tarsus and wing chord similar.

Distribution. *Restinga* (sand-ridge) woodlands on coast of southeastern São Paulo State, Brazil, from Ilha do Cardoso region north just past the mouth of the rio Ribeira, thence upriver to the side streams of the region between Juquiá and Sete Barras at the southern base of the São Paulo

interior plateau. Joinville, Santa Catarina and probably other coastal localities between there and São Paulo.

Description of holotype. Yellowish olive-green above, with slight brownish tint on crown. Blackish lores, postocular streak, postauricular crescent, and yellow-mottled moustache. Wing coverts, remiges and tail blackish, the greater and median coverts with yellow tips forming two wing bars; tips of inner secondaries yellow on their outer webs; outer fringes of remiges yellowish, of rectrices greenish. Yellowish superciliary line and speckling on forehead, face below eye, and auricular area. Underparts yellow, brighter on abdomen and paler on throat, clouded with very faint greenish mottling on flanks and breast to throat. Thighs barred yellow and greenish. In life, iris brown, tarsi and feet black, bill black except pale basal two-thirds of lower mandible.

Measurements of holotype. Wing (chord) 50 mm, tail 45 mm, culmen from base 13.5 mm, tarsus 17 mm, weight (early morning) 7.8 g.

Description of male (paratype). Like female but larger: wing 55.5 mm, tail 48 mm, culmen 15.1 mm, tarsus 20 mm, weight (early morning) 8.8 g.

Specimens examined. *P. kronei*—São Paulo: Jardim Europa 1 ♂, 1 ♀ (MCN); rest from Museu de Zoologia da Universidade de São Paulo (MZUSP): Iguape 1 sex? (MZUSP 107, collected 1898 by R. Krone); Tabatinguara 1 ♂; Costão dos Engenhos 2 ♂, 4 ♀; 1 sex?; Ilha Comprida 1 ♀; Barra do Icapara 1 ♂; Embu (rio Ribeira) 8 ♂ (one being ♀ by measurements), 7 ♀, 6 sex?; Primeiro Morro 6 ♂, 7 ♀, 2 sex?; Porto Estrada 5 ♂, 1 ♀; Barra do ribeirão Onça Parda 7 ♂ (one ♀ by measurement); Onça Parda 2 ♂ (one ♀ by measurement), 1 sex?; Tamanduá 2 ♂, 1 ♀; Ribeirão Fundo 1 ♂; Poço Grande 2 ♂, 2 ♀; Barra do rio das Corujas 4 ♂, 4 sex?

P. ventralis (all MZUSP)—Rio Grande do Sul: 1 ♂, 1 ♀; Santa Catarina: Rio das Antas 2 ♀; Paraná: Castro 3 ♂, 2 ♀, 1 sex?; São Paulo: Itararé 1 ♂, 1 ♀, 1 sex?; Itapetininga 2 ♂; Avaré (Fazenda Santa Magdalena) 1 ♀; Porto Cabral 1 ♀; Lins 1 ♂; Campo Grande 1 ♂; Primeiro Morro 1 ♀; Taquaral (São Miguel Arcanjo) 1 ♂; Pilar 1 ♂; Embura 1 ♂; Embu Guaçu 1 ♀, 1 sex?; Ipiranga 3 ♂ (one ♀ by measurement); Itatiba 1 ♂; Jundiá 1 ♀; Taquaraçu 1 ♂, 1 sex?; Terra Preta 2 ♂, 2 sex?; Alto da Serra 1 ♂, 4 sex?; Pinhalzinho 1 ♂; Boracéia 2 ♂, 1 ♀, 1 sex?; Serra da Bocaina 3 ♂, 2 ♀; Rio de Janeiro: Itatiaia 2 ♂, 3 ♀; Teresópolis 2 ♂, 1 ♀; Minas Gerais: Maria da Fé, 1 ♀.

Etymology. We name this species after Ricardo Krone of Iguape, who was the premier zoologist of the first agricultural boom of the Ribeira Valley at the turn of the century and collected the first specimen of the new form in 1898. That Hans von Berlepsch himself examined the specimen and identified it as *P. ventralis* seems worthy of note.

Habitat and behaviour

We found the new flycatcher regularly at woodland edges and in second growth or scrub woods all over the sandy coastal *restingas* of Ilha Comprida and, to the southwest, Ilha do Cardoso and the island of Cananéia. Northwestward, it was in similar low beach woodlands near Barra do Ribeira.

We never found it on the nearby coastal hills and isolated serras, even 100 m from the coastal plain. However, in the Museu de Zoologia of the

University of São Paulo there are specimens from the rio Ribeira floodplain, from near Barra do Ribeira (Embu) past the northern base of the serra of Iguape (Costão dos Engenhos) to the base of the distant serra of Paranapiacaba (Fig. 1).

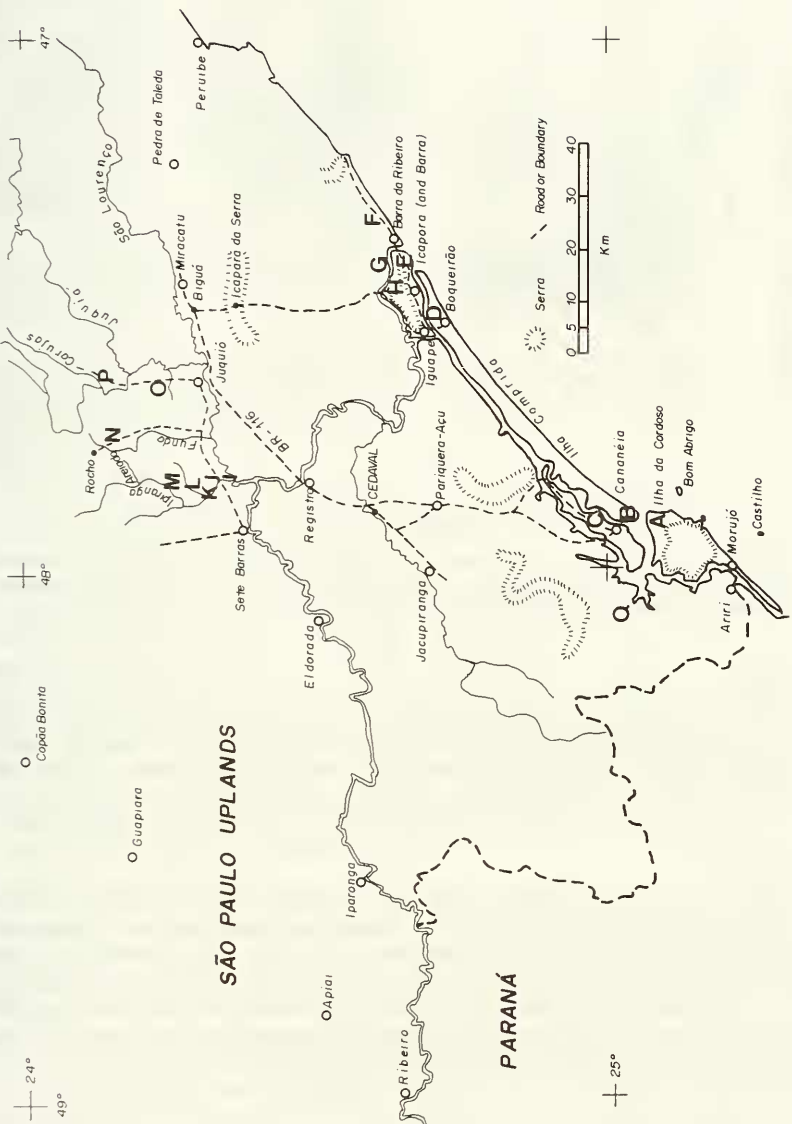
Collections from even a little above the Ribeira/Juquiá floodplains (Rocha) lack the species. Such areas are often in tall forest, apparently never cultivated during the peak of banana and other plantations at the time of Krone. We have not found the species in the *restinga* woods of Bertioaga and Ubatuba, northeastern São Paulo, but have not investigated *restingas* south into Paraná or northeast into the Juréia and Peruibe regions.

Specimen labels of A. M. Olalla, collector of one Ilha Comprida and dozens of Ribeira Valley birds, often indicated second growth (*capoeira*) and that the bird was in pairs or small groups, as we also noted. It flits short distances to snap insects from leaves in the outer foliage of small trees and bushes, often with tail somewhat raised, much like similar small *Phylloscartes* everywhere. To us, it seems less active and less "flitty", less likely to lift its tail or sally to the upper surfaces of leaves, than *P. ventralis* of the mountains, which has received the name *borboletinha* ("little butterfly") in Rio Grande do Sul (Belton 1985). It usually perches on twigs just inside the outer foliage, looking about and hopping or flitting short distances until it sallies for prey. In the cooler early morning and late afternoon, it can appear on twigs outside the foliage or even atop small trees. It does not frequent tall, epiphyte-laden trees of forest zones.

It often forms part of mixed flocks of small birds in the *restinga*, including similarly foraging but more woodland-interior Golden-crowned Warblers *Basileuterus culicivorus*. Small groups in December are probably families, as on 14 December 1984 on Ilha Comprida (Jardim Europa) Willis and J. Ragusa Neto found two full-sized pale-bellied young still fed by and following a pair. These young were silent, unlike the young of *P. ventralis* mentioned below. Pale-bellied specimens in MZUSP are from November and December, and some have small or weak (laterally compressed) beaks.

The netted pair were attracted by playing back calls of one, perhaps the female; recordings were of a bird that stayed low and centrally as the other ranged up and down and widely about it, early in the morning. They flew silently but repeatedly to the recorder until the female and then the male were captured 100 m from where recorded. The pairs seem to maintain territories along roads and in low woodlands and to be spaced 100–200 m from their neighbours, suggesting densities of one pair per hectare or so.

Figure 1. Approximate locations for *Phylloscartes kronei*. A, Ilha do Cardoso; B, Jardim Europa (type locality); C, 3 km N Cananéia; D, Boqueirão; E, NE of the Barra do Icapara; F, NE of Barra do Ribeira. Collected (MZUSP) at Barra do Icapara and Embu (G), Costão dos Engenhos (H), Primeiro Morro (I), Porto Estrada (J), Barra do ribeirão Onça Parda (K), Onça Parda (L), Tamanduá (M), Ribeirão Fundo (town at N), Poço Grande (O), Barra do rio das Corujas (P), Tabatinguara (Q); plus "Iguape". In Field Museum, Chicago, also from Joinville (Santa Catarina), Barra do rio Juquiá, and Trapandé (Pasto Grande), *vide* D. F. Stotz.



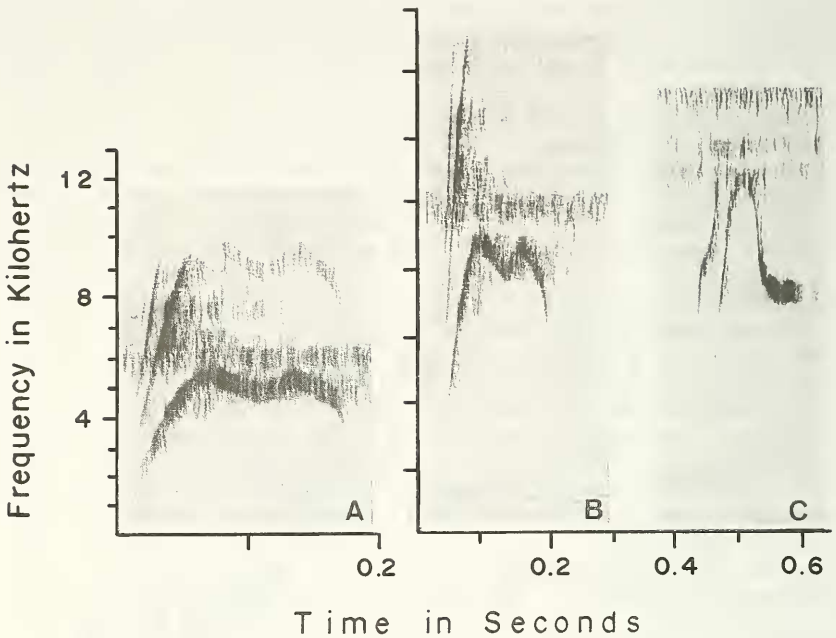


Figure 2. *Feesee* call of *Phylloscartes kronei* sp. n. (A, B) and similar *plee-e* of *Myrmotherula unicolor* (C). Copies of recordings are in the University of Florida and Universidade Estadual de Campinas (SP) sound libraries.

Voice

The frequently repeated call (Fig. 2), a short *feesee* or *plea* rather like the call of *Myrmotherula unicolor* (Formicariidae), is unlike any other flycatcher in São Paulo. The twittering and rapid little song, rather like several other small flycatchers, Willis registered as *sit-it-it-it-it-it-it-it-it-it-sitit-sitit* on 10 July 1983. In flight, there is sometimes a noisy short flutter of wings, as in several other small flycatchers, including *P. ventralis*.

P. ventralis repeatedly calls a faint *tic*, at times double or triple, as noted by Belton (1985: 38). Belton also mentions two types of songs. The young (Itapetininga, 19 December 1986) call, twice per second, a note like the alarm call of Rufous-collared Sparrows *Zonotrichia capensis*. *P. virescens* in the São Paulo mountains often utters a fast descending *chi-i-i-i-i-i-i-i* trill or rattle and gives a twittery song with several high notes just before the end, as Belton (1985: 18) describes for Rio Grande do Sul.

Geographic overlap

This lowland bird is not known to overlap with highland *P. ventralis*, except that one September bird from Primeiro Morro (MZUSP 48476) seems to be *P. ventralis* while the rest are *P. kronei*. It seems likely that the single *P. ventralis* was a wintering bird or wanderer. The ranges of the two

TABLE 1
Measurements of *Phylloscartes* of the *ventralis* group

	Males						Females					
	<i>P. ventralis</i>			<i>P. kronei</i>			<i>P. ventralis</i>			<i>P. kronei</i>		
	<i>n</i>	mean	s.d.	<i>n</i>	mean	s.d.	<i>n</i>	mean	s.d.	<i>n</i>	mean	s.d.
Tarsus	30	19.4	0.8	33	19.4	0.6	19	18.4	0.7	21	18.3	0.8
Wing	29	54.1	2.3	38	53.9	1.8	19	49.9	1.7	23	49.0	1.3
Tail	30	52.7	2.4	38	49.6	1.4	18	48.8	2.2	23	45.7	1.3
Culmen ^a	30	13.9	0.6	38	14.6	0.5	17	13.5	0.5	22	13.8	0.4
Bill width ^b	30	3.1	0.2	36	3.4	0.2	19	3.0	0.2	21	3.4	0.2
Bill height ^b	24	3.0	0.1	27	3.1	0.1	19	3.0	0.2	18	3.1	0.2

^aFrom skull. All measurements exclude birds that seemed mis-sexed (see Specimens examined)

^bAt anterior end of nares.

seem to be separated by tall lower montane Atlantic coastal forests on the lower slopes of the coastal serras.

Measurements

Table 1 shows that males are larger than females in both *P. ventralis* and *P. kronei*. Wing and tarsus measurements are similar in both forms, but the tail is significantly shorter in both sexes of *P. kronei* ($P < 0.01$, *t*-tests), about 4 mm shorter than the wing rather than 1 mm shorter as in *P. ventralis*. The bill of *P. kronei* is slightly but significantly larger ($P < 0.03$, *t*-tests) in all dimensions, except for height in females. The larger bill and shorter tail may be related to its less aerial foraging, under rather than over leaves, for a long tail may help *P. ventralis* turn more quickly in aerial chases and a smaller bill be better in aerial snapping than in striking at prey under leaves, where a larger bill might help *P. kronei* (as in the leaf-striking genus *Todirostrum*). We would expect a bird in the hot, sunny lowlands to forage less on the outside of foliage than a bird in the cool, mist-shrouded uplands. However, foraging of the two forms should be studied in detail.

Taxonomic status

The new bird is very close to upland *P. ventralis* except in voice, tail and bill, yellow face and underparts, and in lacking brown-buff tones on chest and back. We thought there might be some intermediate Ribeira birds in the MZUSP collections on our first visits, under artificial light, but a later visit on a sunny afternoon allowed all specimens to be separated.

P. ceciliae of northeastern Brazil is probably a pale form of the *ventralis* group, judging by its behaviour and mottled face, not a relative of *P. difficilis*. It differs in plumage and voice (Willis, recordings) from *P. kronei*.

The relationship between the *restinga* tanager *Tangara peruviana* and upland woodland *T. preciosa* is very similar to that between *P. ventralis* and *P. kronei* in São Paulo. In some books these tanagers are considered species (Ridgely & Tudor 1990), in others subspecies (Sick 1985).

Another similar case is *Cnemotriccus f. fuscatus* of *restinga* and Ribeira woods versus planalto *C. f. bimaculatus*, possibly a separate species (Belton 1985) and seemingly different in voice (Willis, pers. obs.). In the case of the hummingbird *Amazilia versicolor*, the coastal form (*brevirostris*) in São Paulo is white from throat to belly, the upland form green-spangled, while intermediate birds come from the serra just above the rio Ipiranga (MZUSP specimens). We suspect that in these groups, as in the *P. ventralis* group a woodland bird may have been separated into coastal and interior populations by the humid and tall coastal lower montane and cloud forests.

Songs differ in the upland *A. v. versicolor* and lowland *A. v. brevirostris*. Hummingbird songs are known to vary locally, as in many songbirds, in which birds learn their songs and may show local dialects. Flycatchers apparently have innate songs (Kroodsma 1984) and rarely show dialects, although Lanyon (1978) records some cases in *Myiarchus swainsoni*, for instance). He tested the reactions of one group to playback songs of the other. If birds reacted to both song types in areas of parapatry, he considered the birds to be conspecific. We are uncertain, however, what reaction to another song type represents. If it is a reaction to a territorial competitor (interspecific territoriality), it may be related to food competition rather than to the possibility of an extra-pair copulation (EPC). Gene exchange between two populations is not necessarily shown by reaction to songs. Reactions by *P. kronei* and *P. ventralis* to recorded songs or calls might be interesting, however.

We conclude that *P. kronei* is likely to be a separate species, based on our experience with the remarkably similar plumages but dissimilar voices in *Phylloscartes* flycatchers. A detailed study of biochemistry and of Ribeira Valley populations, to determine if there is hybridization, might resolve the question of subspecific versus specific status. In cases of limited hybridization or secondary intergradation, recent tendencies have been to treat the forms concerned as separate species, but 'regional polymorphisms' have been suggested where mixed pairs occur in zones of local sympatry or parapatry in such cases as *Basileuterus culicivorus/hypoleucus*.

Conservation

The limited range of *P. kronei*, especially in view of the high demand for beach-front property in São Paulo southward, gives ample reason for concern, whether it is a species or just a well-marked subspecies. With the building of a bridge, Ilha Comprida has become riddled with roads for proposed developments, of the kind that are destroying *restinga* zones to the north. Ilha do Cardoso is protected but is mostly a serra, with little *restinga* woodland. The Ribeira Valley is rapidly losing forests and even second growth. *P. kronei* may occur in the protected Juréia Park to the northeast or in protected areas to the south, but this needs study.

Loss of the southwestern 30 km of Ilha Comprida to development would be a considerable setback to *P. kronei* and to remnants of local populations of the endangered parrot *Amazona brasiliensis*. Illegal capture of the latter, via roads, has reduced its populations there in recent years. *Tangara peruviana* depends on *restinga* woodland and is

also endangered, while a new subspecies of *Aramides cajanea* is being described from nearby mangroves by D. F. Stotz. Local subspecies of *Amazilia versicolor*, *A. fimbriata* and *Cnemotriccus fuscatus* occupy the *restinga* edges. Northward in Rio de Janeiro, the rare antbird *Formicivora melanonotus* and new subspecies of *F. serrana* live in *restingas* (Pacheco 1988, Gonzaga & Pacheco 1990). We suggest that it is time for serious discussion of *restinga* faunas and floras in public and in congresses, to restrain beach development. We suggest that the new species be called Restinga Tyrannulet in English (*maria-da-restinga* in Portuguese) to emphasize the conservation problem involved.

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